AMENDMENTS TO THE CLAIMS:

Please replace the claims with the claims provided in the listing below wherein status, amendments, additions and cancellations are indicated.

1. (Currently Amended) A four-pole synchronous motor comprising:

a housing;

an output shaft rotatably supported in the housing;

a cylindrical magnet rotor having four magnetic poles, said magnet rotor being rotatably supported in [[a]] said housing ~~and capable of rotating about an~~ on said output shaft;

a stator, through which the output shaft ~~is pierced~~ extends, provided in a space encased by said magnet rotor, said stator having a stator core on which armature coils are formed with bobbins,

the stator core having first magnetic pole cores formed at ~~both ends~~ opposing sides of a connection body part of crisscrossed ~~connection~~ connected body parts and second magnetic pole cores formed at ~~both ends~~ other opposing sides of the connection body part, the first magnetic pole cores including magnetic flux acting surface parts extended ~~toward both~~ at opposing sides of the first magnetic pole cores ~~thereof~~ in a circumferential direction, and a shape of each of the magnetic flux acting surface ~~part~~ parts on one side of a longitudinal centerline

of the first magnetic pole cores being different from that on ~~the other~~ another side by having a concave section for partially increasing magnetic resistance on the one side, so as to be magnetically asymmetrical with respect to the longitudinal centerline, and

the magnetic flux acting surface parts of the first magnetic pole cores and the second magnetic pole cores, which face said magnet rotor, being formed in the circumferential direction to extend an angle in a range of 50-70 degrees.

2. (Cancelled)

3. (Currently Amended) The four-pole synchronous motor according to claim 1, wherein said second magnetic pole cores have pole piece sections [[are]] provided ~~to both~~ at opposing sides of the second magnetic pole cores as auxiliary cores so as to extend magnetic flux acting surface parts ~~thereof toward both~~ at the opposing sides of the second magnetic pole cores in the circumferential direction, and a shape of each pole piece section on one side of a longitudinal centerline of the second magnetic pole cores is made different from that on ~~the other~~ another side, by forming a hole section for partially increasing magnetic resistance on one side, so as to be magnetically asymmetrical with respect to the longitudinal centerline.

4. (Cancelled)

5. (Currently Amended) A four-pole synchronous motor comprising:

a housing;

an output shaft rotatably supported in the housing;

a cylindrical magnet rotor having four magnetic poles, said magnet rotor being rotatably supported in [[a]] said housing ~~and capable of rotating about an~~ on said output shaft;

armature coils on bobbins;

a stator being provided in a space encased by said magnet rotor, said stator having a stator core, which includes first magnetic pole cores formed at ~~both ends~~ opposing sides of a connection body part of crisscrossed ~~connection~~ connected body parts, through which the output shaft ~~is pierced~~ extends, and second magnetic pole cores formed at ~~both ends~~ other opposing sides of the connection body part and on which are mounted said armature coils ~~are formed with bobbins~~ [[,]] ;

wherein the bobbins have U-shaped groove sections ~~, each of which is formed into~~ each having a U-shape cross section formed by a cylindrical core section, a wall section enclosing the cylindrical core section and a bridging section connecting ~~the both~~ the cylindrical core section and the wall section, the ring-shaped armature coils are fitted in the U-shaped groove sections, [[and]] the second magnetic pole cores are ~~pierced~~ configured to slidably pass through the

cylindrical core sections in an axial direction of the cylindrical core sections until the bridging sections contact side faces of the first magnetic pole cores of the connection body part ~~of the first magnetic pole cores~~ , and the bobbins including the armature coils in a wound state are so disposed on the second magnetic pole cores with the bridging sections contacting the side faces of the first magnetic pole cores such that the bobbins are fitted in the stator core.

6. (Currently Amended) The four-pole synchronous motor according to claim 5, wherein the ring-shaped armature coils are formed of self-welding wire which is welded prior to installation of the ring-shaped armature coils in the bobbins fitted in the U-shaped groove sections of the bobbins.

7. (Currently Amended) The four-pole synchronous motor according to claim 5, wherein the armature coils are formed by winding a self-welding wire, and are fitted in the U-shaped groove sections of the bobbins and adhered therein.

8. (Original) The four-pole synchronous motor according to claim 5, wherein the cylindrical core sections are outwardly projected from the wall sections, insulator films covering side faces of the armature coils fitted in the cylindrical core sections are fitted to the cylindrical core sections, and connection boards, in which cable patterns for mutually connecting electrodes of the armature

coils are formed, are provided on the outer side of the insulator films and fitted to the cylindrical core sections.

9. (Original) The four-pole synchronous motor according to claim 5, wherein the bobbins have first wiring holes, through which off-connection wires, which mutually connect connection boards in which cable patterns for mutually connecting electrodes of the armature coils are formed, are pierced, and second wiring holes, through which external wires, which are connected to the connection boards, are bundled and pierced.

10. (New) The four-pole synchronous motor according to claim 5, wherein said second magnetic pole cores have pole piece sections fixed to opposing sides of said second magnetic pole cores once the armature coils are disposed on said second magnetic pole cores so as to retain said armature coils on said second magnetic pole cores and to function as auxiliary cores so as to extend magnetic flux acting surface parts at the opposing sides of the second magnetic pole cores in the circumferential direction.

11. (New) The four-pole synchronous motor according to claim 10, wherein a shape of each pole piece section on one side of a longitudinal centerline of the second magnetic pole cores is made different from that on another side, by forming

a hole section for partially increasing magnetic resistance on one side, so as to be magnetically asymmetrical with respect to the longitudinal centerline.

12. (New) A four-pole synchronous motor comprising:

a housing:

an output shaft rotatably supported in the housing;

a cylindrical magnet rotor having four magnetic poles, said magnet rotor being rotatably supported in said housing on said output shaft;

a stator, through which the output shaft extends, provided in a space encased by said magnet rotor, said stator having a stator core on which armature coils are formed with bobbins;

the stator core having first magnetic pole cores formed at opposing sides of a connection body part of crisscrossed connected body parts and second magnetic pole cores formed at other opposing sides of the connection body part, the first magnetic pole cores including magnetic flux acting surface parts extended at opposing sides of the first magnetic pole cores in a circumferential direction, and a shape of each of the magnetic flux acting surface parts on one side of a longitudinal centerline of the first magnetic pole cores being different from that on another side by having a concave section for partially increasing magnetic resistance on the one side, so as to be magnetically asymmetrical with respect to the longitudinal centerline; and

said second magnetic pole cores having pole piece sections provided at opposing sides of the second magnetic pole cores as auxiliary cores so as to extend magnetic flux acting surface parts at the opposing sides of the second magnetic pole cores in the circumferential direction, and a shape of each pole piece section on one side of a longitudinal centerline of the second magnetic pole cores being made different from that on another side, by forming a hole section for partially increasing magnetic resistance on one side, so as to be magnetically asymmetrical with respect to the longitudinal centerline.

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APPENDIX I

ALL PENDING CLAIMS WITH AMENDMENTS EFFECTED THEREIN

1. (Currently Amended) A four-pole synchronous motor comprising:

a housing:

an output shaft rotatably supported in the housing;

a cylindrical magnet rotor having four magnetic poles, said magnet rotor being rotatably supported in said housing on said output shaft;

a stator, through which the output shaft extends, provided in a space encased by said magnet rotor, said stator having a stator core on which armature coils are formed with bobbins,

the stator core having first magnetic pole cores formed at opposing sides of a connection body part of crisscrossed connected body parts and second magnetic pole cores formed at other opposing sides of the connection body part, the first magnetic pole cores including magnetic flux acting surface parts extended at opposing sides of the first magnetic pole cores in a circumferential direction, and a shape of each of the magnetic flux acting surface parts on one side of a longitudinal centerline of the first magnetic pole cores being different from that on another side by having a concave section for partially increasing magnetic resistance on the one side, so as to be magnetically asymmetrical with respect to the longitudinal centerline, and

the magnetic flux acting surface parts of the first magnetic pole cores and the second magnetic pole cores, which face said magnet rotor, being formed in the circumferential direction to extend an angle in a range of 50-70 degrees.

2. (Cancelled)

3. (Currently Amended) The four-pole synchronous motor according to claim 1, wherein said second magnetic pole cores have pole piece sections provided at opposing sides of the second magnetic pole cores as auxiliary cores so as to extend magnetic flux acting surface parts at the opposing sides of the second magnetic pole cores in the circumferential direction, and a shape of each pole piece section on one side of a longitudinal centerline of the second magnetic pole cores is made different from that on another side, by forming a hole section for partially increasing magnetic resistance on one side, so as to be magnetically asymmetrical with respect to the longitudinal centerline.

4. (Cancelled)

5. (Currently Amended) A four-pole synchronous motor comprising:

a housing:

an output shaft rotatably supported in the housing;

a cylindrical magnet rotor having four magnetic poles, said magnet rotor being rotatably supported in said housing on said output shaft;

armature coils on bobbins;

a stator being provided in a space encased by said magnet rotor, said stator having a stator core, which includes first magnetic pole cores formed at opposing sides of a connection body part of crisscrossed connected body parts, through which the output shaft extends, and second magnetic pole cores formed at other opposing sides of the connection body part and on which are mounted said armature coils;

wherein the bobbins have U-shaped groove sections each having a U-shape cross section formed by a cylindrical core section, a wall section enclosing the cylindrical core section and a bridging section connecting the cylindrical core section and the wall section, the ring-shaped armature coils are fitted in the U-shaped groove sections, the second magnetic pole cores are configured to slidably pass through the cylindrical core sections in an axial direction of the cylindrical core sections until the bridging sections contact side faces of the first magnetic pole cores of the connection body part, and the bobbins including the armature coils in a wound state are so disposed on the second magnetic pole cores with the bridging sections contacting the side faces of the first magnetic pole cores such that the bobbins are fitted in the stator core.

6. (Currently Amended) The four-pole synchronous motor according to claim 5, wherein the ring-shaped armature coils are formed of self-welding wire which is welded prior to installation of the ring-shaped armature coils in the bobbins fitted in the U-shaped groove sections of the bobbins.

7. (Currently Amended) The four-pole synchronous motor according to claim 5, wherein the armature coils are formed by winding a self-welding wire, and are fitted in the U-shaped groove sections of the bobbins and adhered therein.

8. (Original) The four-pole synchronous motor according to claim 5, wherein the cylindrical core sections are outwardly projected from the wall sections, insulator films covering side faces of the armature coils fitted in the cylindrical core sections are fitted to the cylindrical core sections, and connection boards, in which cable patterns for mutually connecting electrodes of the armature coils are formed, are provided on the outer side of the insulator films and fitted to the cylindrical core sections.

9. (Original) The four-pole synchronous motor according to claim 5, wherein the bobbins have first wiring holes, through which off-connection wires, which mutually connect connection boards in which cable patterns for mutually connecting electrodes of the armature coils are formed, are pierced, and second

wiring holes, through which external wires, which are connected to the connection boards, are bundled and pierced.

10. (New) The four-pole synchronous motor according to claim 5, wherein said second magnetic pole cores have pole piece sections fixed to opposing sides of said second magnetic pole cores once the armature coils are disposed on said second magnetic pole cores so as to retain said armature coils on said second magnetic pole cores and to function as auxiliary cores so as to extend magnetic flux acting surface parts at the opposing sides of the second magnetic pole cores in the circumferential direction.

11. (New) The four-pole synchronous motor according to claim 10, wherein a shape of each pole piece section on one side of a longitudinal centerline of the second magnetic pole cores is made different from that on another side, by forming a hole section for partially increasing magnetic resistance on one side, so as to be magnetically asymmetrical with respect to the longitudinal centerline.

12. (New) A four-pole synchronous motor comprising:

a housing:

an output shaft rotatably supported in the housing;

a cylindrical magnet rotor having four magnetic poles, said magnet rotor being rotatably supported in said housing on said output shaft;

a stator, through which the output shaft extends, provided in a space encased by said magnet rotor, said stator having a stator core on which armature coils are formed with bobbins;

the stator core having first magnetic pole cores formed at opposing sides of a connection body part of crisscrossed connected body parts and second magnetic pole cores formed at other opposing sides of the connection body part, the first magnetic pole cores including magnetic flux acting surface parts extended at opposing sides of the first magnetic pole cores in a circumferential direction, and a shape of each of the magnetic flux acting surface parts on one side of a longitudinal centerline of the first magnetic pole cores being different from that on another side by having a concave section for partially increasing magnetic resistance on the one side, so as to be magnetically asymmetrical with respect to the longitudinal centerline; and

said second magnetic pole cores having pole piece sections provided at opposing sides of the second magnetic pole cores as auxiliary cores so as to extend magnetic flux acting surface parts at the opposing sides of the second magnetic pole cores in the circumferential direction, and a shape of each pole piece section on one side of a longitudinal centerline of the second magnetic pole cores being made different from that on another side, by forming a hole section for partially

increasing magnetic resistance on one side, so as to be magnetically asymmetrical with respect to the longitudinal centerline.